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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/650,964	08/29/2000	Andrew Bishop	Q00-1041-US1	8999

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EXAMINER	
AHN, SAM K	

ART UNIT	PAPER NUMBER
2637	10

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/650,964	BISHOP ET AL.	
	Examiner	Art Unit	
	Sam K. Ahn	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *amendment, received on 5/27/04*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on 5/17/04 have been fully considered but they are not persuasive. Applicants have amended the claims of 1 and 6-8 to include the limitation of the filter adaptation circuit modifying the amplification control signal based on the comparison and a known training pattern, wherein further processing is performed based again on the known training pattern. However, newly cited reference by Amir et al. teach this limitation as set below.

Claim Objections

2. Claims 1-12 are objected to because of the following informalities:

   In claims 1 and 7, lines 13 and 9, respectively, delete "based on".

   In claim 6, line 2, delete "further".

   In claim 10, line 1, delete "a voltage" and insert "the voltage".

   Claims 2-5,8-9 and 11-12 directly or indirectly depend on claim 1 or 7.

   Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 1 and 6-8, applicants have amended the claims to incorporate wherein the filter adaptation circuit modifies the amplification control signal based on the comparison and a known training pattern, wherein further processing is performed based again on the known training pattern.

The independent claims of 1 and 7 appear to recite the limitation wherein the circuit is operating in a normal mode, where the switches 235 and 236 has been to set correspondingly. However, implementation of using the known training pattern is performed during a training mode. How can the normal mode be implemented with the training mode at the same time?

Claims 2-5 and 9-12 directly or indirectly depend on claim 1 or 7.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3, 7, 9, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bazes et al. (Bazes, cited previously) in view of Amir et al. (Amir).

Regarding claims 1 and 7, Bazes teaches a method of canceling inter-symbol interference and a circuit for adaptively amplifying an input signal (see Fig.4), wherein the circuit comprises an adaptive filter (402) connected to receive the input signal, i(t), and to amplify (see 605, 606 in Fig.6) a predetermined frequency range (note col.4, lines 52-56) of the input signal by an amount based on an amplification control signal (zero selection signal) input to the adaptive filter. (note col.4, line 53 – col.6, line 50) Bazes also teaches a comparator (404, see further in Fig.9) connected to receive the amplified input signal from the adaptive filter and a predetermined threshold signal, Vth, the comparator outputting a digital comparison signal, d(t), indicating whether the amplified input signal is greater than the threshold signal, where elements 801 and 802 compare the amplified input signal is greater than Vth. (note col.6, line 53 – col.7, line 38) Further, Bazes teaches a filter adaptation circuit (406) connected to receive the digital comparison signal to modify the amplification control signal (zero selection signal) based on the digital comparison signal. (note col.7, line 40 – col.8, line 53) Bazes further teaches that the adaptive equalization may be implemented by automatically varying its characteristics in a different transmission medium. (note col.1, line 66 – col.2, line 4)

However, Bazes does not explicitly teach wherein the adaptive equalization circuit uses a known training pattern.

Amir teaches an adaptive equalization as well, wherein a known training pattern is used to calibrate the adaptive equalizer. (note col.4, lines 24-42) Through Amir's teaching, the receiver is prepared to properly equalize an incoming signal. Therefore, it would have been obvious to one skilled in the art at the time of the invention to receive the known training pattern, as the input signal of Bazes, for the purpose of calibrating the adaptive equalization thus accurately and efficiently reproduce the input signal, as taught by Amir. (note col.4, lines 24-42)

Regarding claim 3, Bazes in view of Amir teach all subject matter claimed, as described above. Bazes further teach wherein the predetermined frequency range amplified by the adaptive filter consists of high frequency components of the input signal. (note col.4, line 53 – col.6, line 50)

Regarding claims 9 and 10, Bazes in view Amir teach all subject matter claimed, as applied to claim 7. Bazes further teaches wherein the predetermined threshold level, Vth, is a voltage offset from the voltage level used to convert the input signal to a digital value, and further wherein the voltage level of the predetermined threshold level is below the voltage level used to convert the input SCSI signal to the digital value. (note col.7, lines 15-29)

Regarding claim 12, Bazes in view Amir teach all subject matter claimed, as applied to claim 1. Bazes, as explained above, teaches a comparator (404, see

further in Fig.9) connected to receive the amplified input signal from the adaptive filter and a predetermined threshold signal, Vth, the comparator outputting a digital comparison signal, d(t), indicating whether the amplified input signal is greater than the threshold signal, where elements 801 and 802 compare the amplified input signal is greater than Vth. (note col.6, line 53 – col.7, line 38)

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bazes et al. (cited previously) in view of Amir and Gasparik (cited previously).

   Regarding claim 2, Bazes in view of Amir teach all subject matter claimed, as applied to claim 1. However, Bazes in view of Amir do not explicitly teach wherein the input signals is a SCSI signal.

   Gasparik teaches equalization of input signal, equalizing high frequency signals. (see Fig.2) Gasparik further teaches equalizing SCSI signals, (note col.3, line 50 – col.4, line 10), as well as input signals traveled through LAN connections, as also taught by Bazes. Therefore, it would have been obvious to one skilled in the art at the time of the invention to implement Bazes' teaching in an environment receiving SCSI signals where the advantages of Bazes' system properly implements adaptive equalization of input signals.

6. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bazes et al. (cited previously) in view of Amir and Stroet et al. (cited previously).

Regarding claims 4 and 11, Bazes in view of Amir teach all subject matter claimed, as applied to claim 1 or 7. However, Bazes in view of Amir do not teach wherein the adaptive filter is a third order Bessel filter. Stroet teaches this limitation. Stroet teaches implementation of the third order Bessel filter where the linearity requirement is needed. Stroet also teaches the filter adaptively adjusting input signal. (note col.9, line 46 – col.10, line 8) Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Bazes' teaching of the filter having a first order filtering (comprising resistors and capacitors, note col.5, lines 37-40) with a third order Bessel filter for the purpose of effectively meeting a linearity requirement when necessary during filtering stage, as taught by Stroet. (note col.9, line 46 – col.10, line 8)

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bazes et al. (cited previously) in view of Amir and Gaudet (cited previously).

Regarding claim 5, Bazes in view Amir teach all subject matter claimed, as applied to claim 1. However, Bazes in view of Amir do not teach a DAC converting the feedback signal from the filter adaptation to feed the signal to the adaptive filter. Gaudet teaches (see Fig.4) an analog adaptive filter (67), further including DAC (81, digital to analog converter) converting the output signal from the filter adaptation (19) to feed the adaptive filter. (note col.12, line 43 – col.13, line 4) Therefore, it would have been obvious to one skilled in the art at the time of the invention to replace Bazes' digital adaptive filter with Gaudet's analog

adaptive filter which would result in having a DAC for feeding the signal to the filter in an analog format. It would have been a matter of design choice to either provide a digital adaptive filter or an analog adaptive filter, as these filters provide almost identical results, and one may be opted to design using a filter which are readily available in the market.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Sam Ahn** whose telephone number is **(703) 305-0754**.
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Jay Patel**, can be reached at **(703) 308-7728**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

P.O. Box 1450

Alexandria, VA 22313-1450

or faxed to:

(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Sam K. Ahn
8/4/04

YOUNG T. TSE
PRIMARY EXAMINER